

Supplementary data

MST coil models were validated by comparing the simulated inductance to that measured with an LCR meter (Model 889A, B&K Precision Corp., Yorba Linda, CA). The measured CIRC, CAP and DCONE coil inductance, L , is 22.3, 21.3, and 17.7 μH , respectively. The measured values matched with the simulated coils inductances within 8%.

To validate the finite-element model of MST, we measured the electric field in a flask of saline (3000 mL, round-bottom flask, diameter ≈ 9 cm) using a dipole probe which consists of a twisted pair of insulated wires with bared Ag-AgCl tips that are 1.0 cm apart (Glover and Bowtell, 2007; Tofts and Branston, 1991). The Magstim DCONE coil was centered at the bottom of the flask. Single pulses were delivered with the Magstim Theta MST device at the maximum pulse amplitude. Voltage measurements were taken along the central axis of the flask at increments of 0.5 cm away from the center of the DCONE coil. The dipole was aligned along the induced electric field direction by orienting it so as to maximize the measured voltage at any given distance from the coil. The measured and simulated electric field magnitudes as a function of distance from the coil center are plotted in Figure S1. The maximum percent error between the measured and simulated electric field is 15%. Possible sources of discrepancy include inaccurate estimation of the thickness of the coil insulation and the flask wall which contribute to the measurement error of the distance between the coil conductor and the probe. Small differences between the model and the actual construction of the coil could also present a source of error.

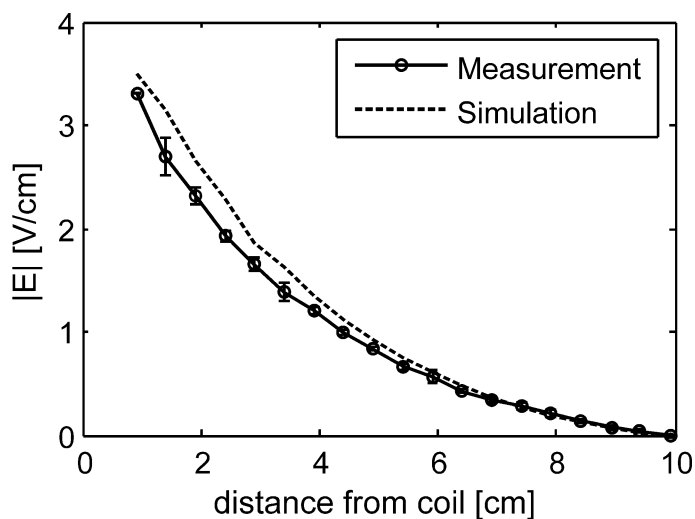


Figure S1. Measured ($N = 2$ trials, mean \pm standard error) and simulated electric field as a function of distance from the DCONE coil center. MST pulse amplitude is set to the Magstim Theta device maximum. The percent error between the measured and simulated electric field is less than 15%.

References

- Glover, P.M., Bowtell, R., 2007. Measurement of electric fields due to time-varying magnetic field gradients using dipole probes. *Phys Med Biol* 52, 5119-5130.
- Tofts, P.S., Branston, N.M., 1991. The measurement of electric field, and the influence of surface charge, in magnetic stimulation. *Electroencephalogr Clin Neurophysiol* 81, 238-239.